

Atty. Dkt. No. 058333-0112

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Yang-Do CHOI et al.

Title: GENES FOR S-ADENOSYL L-METHIONINE:JASMONIC ACID CARBOXYL METHYLTRANSFERASE AND A METHOD FOR THE DEVELOPMENT OF PATHOGEN-AND STRESS-RESISTANT PLANTS USING THE GENES

Appl. No.: Unassigned

Filing Date: February 8, 2002

Examiner: Unassigned

Art Unit: 1638

PRELIMINARY AMENDMENT

Commissioner for Patents
Box PCT
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application, Applicants respectfully request that the above-identified application be amended as follows:

In the Claims:

In accordance with 37 C.F.R. §1.21, please substitute for claims 3, 4, 9, and 10 the following rewritten version of the same claims, as amended. The changes are shown explicitly in the attached "Marked-up Version of Amended Claims."

3. (Amended) The cDNA gene according to claim 2, which encodes an amino acid sequence represented by Sequence ID No. 1.

4. (Amended) The cDNA gene JMT according to claim 3, which encodes an amino acid sequence represented by Sequence ID No. 2 (Accession No. KCTC 0794BP).

9. (Amended) The method according to claim 8, wherein the gene encoding jasmonic acid carboxyl methyltransferase is the cDNA gene encoding a jasmonic acid carboxyl methyltransferase JMT having an amino acid sequence represented by Sequence ID No. 3.

10. (Amended) The method according to claim 9, wherein the gene encoding jasmonic acid carboxyl methyltransferase is the cDNA gene encoding an amino acid sequence represented by Sequence ID No. 1.

REMARKS

Applicants respectfully request that the foregoing amendments be made prior to examination of the present application. The amendments are made to correct multiple dependencies and do not change the scope of the invention.

Respectfully submitted,

Date February 8, 2002

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22428

PATENT TRADEMARK OFFICE

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for Stephen A. Bent
Attorney for Applicants
Registration No. 29,768
Reg. No. 34,485

MARKED UP VERSION OF AMENDED CLAIMS

3. (Amended) The cDNA gene according to claim 2, which [contains]
encodes an amino acid sequence represented by Sequence ID No. 1.

4. (Amended) The cDNA gene JMT according to claim 3, which
[contains] encodes an amino acid sequence represented by Sequence ID No. 2
(Accession No. KCTC 0794BP).

9. (Amended) The method according to claim 8, wherein the gene
encoding jasmonic acid carboxyl methyltransferase is the [gene as defined in claim 2]
cDNA gene encoding a jasmonic acid carboxyl methyltransferase JMT having an amino
acid sequence represented by Sequence ID No. 3.

10. (Amended) The method according to claim 9, wherein the gene
encoding jasmonic acid carboxyl methyltransferase is the [gene as defined in claim 3 or
4] cDNA gene encoding an amino acid sequence represented by Sequence ID No. 1.

Rec'd PCT/PTO 13 JUN 2002

Atty. Dkt. No. 058333-0112

JF3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Choi, Yang-Do *et al.*

Title: GENES FOR S-ADENOSYL L-METHIONINE: JASMONIC ACID CARBOXYL-METHYLTRANSFERASE AND A METHOD FOR THE DEVELOPMENT OF PATHOGEN-AND STRESS-RESISTANT PLANTS USING THE GENES

Appl. No.: 10/049,187

Filing Date: June 13, 2002

Examiner: Unassigned

Art Unit: Unassigned

AMENDMENT IN RESPONSE TO NOTICE UNDER 37 CFR §§1.821-825

Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Notice to Comply With Requirements Under 35 U.S.C. 371 In the United States Designated/Elected Office (DO/EO/US) mailed April 16, 2002, please amend the application as follows:

Please amend the application as follows:

In the Specification:

Please amend the specification as shown:

Please delete the paragraph on page 5, lines 29 to page 6, line 3 and replace it with the following paragraph:

Figure 2 shows the amino acid sequence of protein derived from cDNA gene of JMT enzyme cloned from *Arabidopsis thaliana* in comparison to the amino acid sequence of protein derived from SAMT as a gene for known salicylic acid methyltransferase (Accession No. AF133053; Ross *et al.*,

1999). In Figure 2, AtJMT denotes JMT enzyme of *Arabidopsis thaliana* and SAMT (SEQ ID NO: 6) denotes salicylic acid methyltransferase of *Clarkia breweri*.

Please delete the paragraph on page 6, lines 4 to 8 and replace it with the following paragraph:

Figure 3 (SEQ ID NOS 7-8) shows the structure of recombinant gene pGST-JMT for expression of *JMT* gene in the form of a fusion protein with glutathione *S*-transferase by inserting *JMT* gene into pGEX-2T as *E. coli* expression vector. In Figure 3, Ptac denotes tac promoter and the underline indicates the nucleotide and amino acid sequences of amino terminal of JMT constituting the fusion protein.

REMARKS

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

Date 13 June 2002

By S. A. Bent

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Stephen A. Bent
Attorney for Applicant
Reg. No. 29,768

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No.19-0741 for any such fees; and applicant(s) hereby petition for any needed extension of time.

**MARKED UP VERSION ATTACHED TO AMENDMENT IN
SERIAL NO. 10/049,187**

**Marked up version of the paragraph starting at page 5, line 29 to page 6, line 3
is below:**

Figure 2 shows the amino acid sequence of protein derived from cDNA gene of JMT enzyme cloned from *Arabidopsis thaliana* in comparison to the amino acid sequence of protein derived from SAMT as a gene for known salicylic acid methyltransferase (Accession No. AF133053; Ross *et al.*, 1999). In Figure 2, AtJMT denotes JMT enzyme of *Arabidopsis thaliana* and SAMT (**SEQ ID NO: 6**) denotes salicylic acid methyltransferase of *Clarkia breweri*.

Marked up version of the paragraph starting at page 6, lines 4 to 8 is below:

Figure 3 (**SEQ ID NOS 7-8**) shows the structure of recombinant gene pGST-JMT for expression of *JMT* gene in the form of a fusion protein with glutathione S-transferase by inserting *JMT* gene into pGEX-2T as *E. coli* expression vector. In Figure 3, Ptac denotes tac promoter and the underline indicates the nucleotide and amino acid sequences of amino terminal of JMT constituting the fusion protein.

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SONG, JONG-TAE
SONG, SANG-IK
SEO, HAK-SOO
KOO, YEON-JONG

<120> GENES FOR S-ADENOSYL L-METHIONINE: JASMONIC ACID CARBOXYL METHYLTRANSFERASE AND A METHOD FOR THE DEVELOPMENT OF PATHOGEN- AND STRESS-RESISTANT PLANTS USING THE GENES

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Rec'd PCT/PTO 13 JUN 2002

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Met Ser Asn Ser Glu Ile Ser Ser Ile Gly Ile Ala Asp Leu Gly Cys
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145 150 155

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160 165 170

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 Cys Pro Asp Leu Asp Arg Pro Val Pro Glu Leu Arg Val Ser Leu Asn
 85 90 95
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 Pro Gly Gly Arg Met Val Leu Ser Phe Leu Gly Arg Arg Ser Leu Asp
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 245 250 255

Leu Met Ser Met Ala Lys Glu Gly Ile Ile Glu Glu Glu Lys Ile Asp
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12     CARBOXYL METHYLTRANSFERASE AND A METHOD FOR THE
13     DEVELOPMENT OF PATHOGEN- AND STRESS-RESISTANT PLANTS
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18 <140> CURRENT APPLICATION NUMBER: 10/049,187
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22 <151> PRIOR FILING DATE: 2001-06-05
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120	Ala	Leu	Gln	Phe	Gln	Thr	Asp	Phe	Leu	Val	Phe	Leu	Arg	Ser	Arg	Ser	
121	205			210				215								220	
123	gag	gag	ttg	gtc	ccg	gga	ggc	cga	atg	gtt	tta	tcg	tcc	ctt	ggt	aga	722
124	Glu	Glu	Leu	Val	Pro	Gly	Gly	Arg	Met	Val	Leu	Ser	Phe	Leu	Gly	Arg	
125					225						230					235	
127	aga	tca	ctg	gat	ccc	aca	acc	gaa	gag	agt	tgc	tat	caa	tgg	gaa	ctc	770
128	Arg	Ser	Leu	Asp	Pro	Thr	Thr	Glu	Glu	Ser	Cys	Tyr	Gln	Trp	Glu	Leu	
129					240					245						250	
131	cta	gct	caa	gct	ctt	atg	tcc	atg	gcc	aaa	gag	ggt	atc	atc	gag	gaa	818
132	Leu	Ala	Gln	Ala	Leu	Met	Ser	Met	Ala	Lys	Glu	Gly	Ile	Ile	Glu	Glu	
133					255					260						265	
135	gag	aag	atc	gat	gct	ttc	aac	gct	cct	tac	tat	gct	gcg	agc	tcc	gaa	866
136	Glu	Lys	Ile	Asp	Ala	Phe	Asn	Ala	Pro	Tyr	Tyr	Ala	Ala	Ser	Ser	Glu	
137					270					275						280	
139	gag	ttg	aaa	atg	gtg	ata	gag	aaa	gaa	ggg	tca	ttt	tcg	atc	gat	agg	914
140	Glu	Leu	Lys	Met	Val	Ile	Glu	Lys	Glu	Gly	Ser	Phe	Ser	Ile	Asp	Arg	
141					285					290			295			300	
143	ctt	gag	ata	agt	ccg	att	gat	tgg	gaa	ggt	ggg	agt	atc	agt	gag	gag	962
144	Leu	Glu	Ile	Ser	Pro	Ile	Asp	Trp	Glu	Gly	Gly	Ser	Ile	Ser	Glu	Glu	
145					305					310						315	
147	agt	tat	gac	ctt	gca	ata	agg	tcc	aaa	ccc	gaa	gcc	cta	gct	agt	ggc	1010
148	Ser	Tyr	Asp	Leu	Ala	Ile	Arg	Ser	Lys	Pro	Glu	Ala	Leu	Ala	Ser	Gly	
149					320					325						330	
151	cga	aga	gtg	tct	aat	acc	ata	aga	gct	gtg	gtc	gag	ccg	atg	cta	gaa	1058
152	Arg	Arg	Val	Ser	Asn	Thr	Ile	Arg	Ser	Ala	Val	Val	Glu	Pro	Met	Leu	Glu
153					335					340						345	
155	cct	act	ttc	ggg	gaa	aat	gtg	atg	gac	gag	ctt	ttt	gaa	agg	tat	gca	1106
156	Pro	Thr	Phe	Gly	Glu	Asn	Val	Met	Asp	Glu	Leu	Phe	Glu	Arg	Tyr	Ala	
157					350					355						360	
159	aag	atc	gtg	gga	gag	tac	ttc	tat	gta	agc	tcg	cca	cga	tac	gct	att	1154
160	Lys	Ile	Val	Gly	Glu	Tyr	Phe	Tyr	Val	Ser	Ser	Pro	Arg	Tyr	Ala	Ile	
161					365					370			375			380	
163	gtt	att	ctt	tcg	ctc	gtt	aga	acc	ggt	tgatcgtgtt	ataacatatg						1201
164	Val	Ile	Leu	Ser	Leu	Val	Arg	Thr	Gly								
165					385												
167	ccaatataca	tgtctttggg	cctacaatga	catgatttgg	tagtttcta	atcaagcata											1261
169	tgtatataaa	tttgcattcga	gaataaaaaata	ataaaaataaa	gtgtgatgtt	acggtagacc											1321
171	cttttttttt	tttcttcatt	tacggtagac	ctatagtatt	aaaacaaata	gaatcagctg											1381
173	gttcggacct	tgaaatgaga	gagcttggat	gcatgttagac	gcattagtcg	tgaattattc											1441
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187	Ser	Tyr	Ala	Lys	Asn	Ser	Thr	Ala	Gln	Ser	Asn	Ile	Ile	Ser	Leu	Gly	
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RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/049,187

DATE: 07/15/2002
TIME: 12:38:09

Input Set : A:\58333112.app
Output Set: N:\CRF3\07152002\J049187.raw

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190 Arg Arg Val Met Asp Glu Ala Leu Lys Leu Met Met Ser Asn Ser
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194      50          55          60
196 Asn Ser Leu Leu Ser Ile Ser Asn Ile Val Asp Thr Ile His Asn Leu
197      65          70          75          80
199 Cys Pro Asp Leu Asp Arg Pro Val Pro Glu Leu Arg Val Ser Leu Asn
200      85          90          95
202 Asp Leu Pro Ser Asn Asp Phe Asn Tyr Ile Cys Ala Ser Leu Pro Glu
203      100         105         110
205 Phe Tyr Asp Arg Val Asn Asn Lys Glu Gly Leu Gly Phe Gly Arg
206      115         120         125
208 Gly Gly Gly Glu Ser Cys Phe Val Ser Ala Val Pro Gly Ser Phe Tyr
209      130         135         140
211 Gly Arg Leu Phe Pro Arg Arg Ser Leu His Phe Val His Ser Ser Ser
212      145         150         155         160
214 Ser Leu His Trp Leu Ser Gln Val Pro Cys Arg Glu Ala Glu Lys Glu
215      165         170         175
217 Asp Arg Thr Ile Thr Ala Asp Leu Glu Asn Met Gly Lys Ile Tyr Ile
218      180         185         190
220 Ser Lys Thr Ser Pro Lys Ser Ala His Lys Ala Tyr Ala Leu Gln Phe
221      195         200         205
223 Gln Thr Asp Phe Leu Val Phe Leu Arg Ser Arg Ser Glu Glu Leu Val
224      210         215         220
226 Pro Gly Gly Arg Met Val Leu Ser Phe Leu Gly Arg Arg Ser Leu Asp
227      225         230         235         240
229 Pro Thr Thr Glu Glu Ser Cys Tyr Gln Trp Glu Leu Leu Ala Gln Ala
230      245         250         255
232 Leu Met Ser Met Ala Lys Glu Gly Ile Ile Glu Glu Glu Lys Ile Asp
233      260         265         270
235 Ala Phe Asn Ala Pro Tyr Tyr Ala Ala Ser Ser Glu Glu Leu Lys Met
236      275         280         285
238 Val Ile Glu Lys Glu Gly Ser Phe Ser Ile Asp Arg Leu Glu Ile Ser
239      290         295         300
241 Pro Ile Asp Trp Glu Gly Gly Ser Ile Ser Glu Glu Ser Tyr Asp Leu
242      305         310         315         320
244 Ala Ile Arg Ser Lys Pro Glu Ala Leu Ala Ser Gly Arg Arg Val Ser
245      325         330         335
247 Asn Thr Ile Arg Ala Val Val Glu Pro Met Leu Glu Pro Thr Phe Gly
248      340         345         350
250 Glu Asn Val Met Asp Glu Leu Phe Glu Arg Tyr Ala Lys Ile Val Gly
251      355         360         365
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254      370         375         380
256 Leu Val Arg Thr Gly
257 385
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261 <211> LENGTH: 30
262 <212> TYPE: DNA

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RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/049,187

DATE: 07/15/2002
TIME: 12:38:09

Input Set : A:\58333112.app
Output Set: N:\CRF3\07152002\J049187.raw

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 265 <220> FEATURE:
 266 <223> OTHER INFORMATION: Description of Artificial Sequence: 5' primer for
 267 PCR of JMT gene
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 275 <212> TYPE: DNA
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 278 <220> FEATURE:
 279 <223> OTHER INFORMATION: Description of Artificial Sequence: 3' primer for
 280 PCR of JMT gene
 282 <400> SEQUENCE: 5
 283 tttaagaat tcacgactaa tgcgcttaca 30
 286 <210> SEQ ID NO: 6
 287 <211> LENGTH: 359
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 293 Ser Tyr Ala Met Asn Ser Phe Ile Gln Arg Gln Val Ile Ser Ile Thr
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 295 Lys Pro Ile Thr Glu Ala Ala Ile Thr Ala Leu Tyr Ser Gly Asp Thr
 35 40 45
 298 Val Thr Thr Arg Leu Ala Ile Ala Asp Leu Gly Cys Ser Ser Gly Pro
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 301 Asn Ala Leu Phe Ala Val Thr Glu Leu Ile Lys Thr Val Glu Glu Leu
 65 70 75 80
 304 Arg Lys Lys Met Gly Arg Glu Asn Ser Pro Glu Tyr Gln Ile Phe Leu
 85 90 95
 307 Ile Glu Asn Asp Val Asp Gly Val Cys Phe Ile Asn Gly Val Pro Gly
 100 105 110
 313 Ser Phe Tyr Gly Arg Leu Phe Pro Arg Asn Thr Leu His Phe Ile His
 115 120 125
 316 Leu Asn Ala Tyr Tyr Lys Gln Phe Gln Glu Asp His Ala Leu Phe Leu
 130 135 140
 319 Ser Ser Tyr Ser Leu Met Trp Leu Ser Gln Val Pro Ile Gly Ile Glu
 145 150 155 160
 322 Ser Asn Lys Gly Asn Ile Tyr Met Ala Asn Thr Cys Pro Gln Ser Val
 165 170 175
 325 Ile Leu Gly Arg Arg Ser Glu Asp Arg Ala Ser Thr Glu Cys Cys Leu
 180 185 190
 328 Arg Cys Arg Ala Gln Glu Val Val Pro Gly Gly Arg Met Val Leu Thr
 195 200 205
 331 Ile Trp Gln Leu Leu Ala Met Ala Leu Asn Gln Met Val Ser Glu Gly
 210 215 220
 334 file:///C:/Crft3/Outhold/VsrJ049187.htm

VERIFICATION SUMMARY
PATENT APPLICATION: US/10/049,187

DATE: 07/15/2002
TIME: 12:38:10

Input Set : A:\58333112.app
Output Set: N:\CRF3\07152002\J049187.raw

L:19 M:271 C: Current Filing Date differs, Replaced Current Filing Date